EDUCATOR NOTES

S.C.R.A.P. Challenge: *micro-launch*

STUDENT ▪ CADET ▪ ROCKET ▪ ADVENTURE ▪ PROGRAM

plan

A typical rocket works by forcing hot gases at high pressure out of a narrowed opening on the bottom of the rocket. As Newton's laws of motion and the law of conservation of momentum predict, the gases escaping in one direction push the rocket in the other direction.

This is a hot, loud, fast, and high-energy process. It takes a lot of time to set up a launch, and a lot of time to reset afterwards, and the energy and speeds involved can make it difficult to take measurements and get data from a new, experimental rocket design.

Because of this, S.C.R.A.P. Challengers will use air-powered launchers to test and observe their rocket designs as they undergo projectile motion, rather than true rocket-powered flight.

While launch can be accomplished using a commercially-available air launcher, usually sold as a "stomp rocket", "stomp flyer" or "air stomp launcher," students can also design and build their own launchers using recycled and classroom crafting materials, outlined below.

Bellows

A mechanism to push air and launch the paper rocket.

Hose

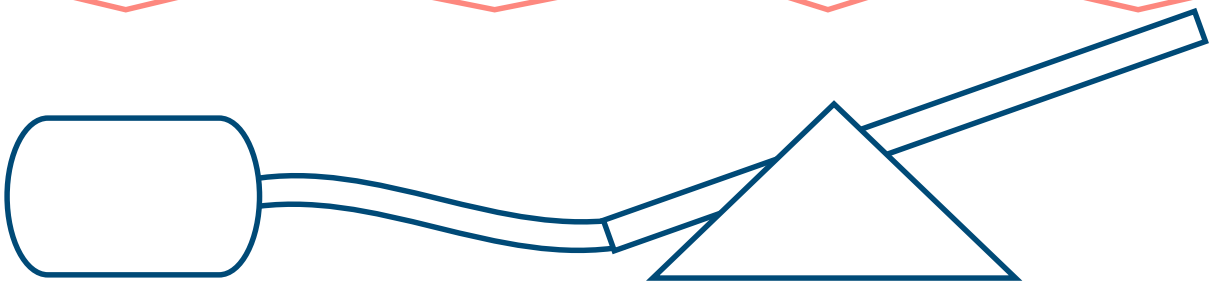
Irrigation tubing or similar to connect the bellows to the launcher tube.

Frame

To hold the launcher tube.

Tube

The component that the paper rocket sits on and is launched from.



You could try making this from:

- ⇒ Different types of plastic bottles, eg hand sanitizer, "pop tops", mini shampoo bottle, lotion tube
- ⇒ Paper "water balloons"
- ⇒ Squash ball or racquetball with a hole poked in it

The hose needs to make an airtight connection between the bellows and the tube. You could try:

- ⇒ Sticky tape
- ⇒ Blu-tak
- ⇒ Plasticine
- ⇒ Electrical tape

You could try making this from:

- ⇒ Popsticks
- ⇒ Cardboard
- ⇒ Pipe cleaners
- ⇒ Science lab equipment
- ⇒ Set squares
- ⇒ Lego

You could try making this from:

- ⇒ Drinking straw (try different diameters!)
- ⇒ Empty ballpoint pen
- ⇒ Irrigation tubing
- ⇒ Rolled paper or cardboard